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**TRANSMITTAL  
FORM**

(to be used for all correspondence after initial filing)

<b>TRANSMITTAL FORM</b> (to be used for all correspondence after initial filing)	Application Number	10/533,651
	Filing Date	May 5, 2005
	First Named Inventor	Kesatoshi Takeuchi
	Art Unit	2834
	Examiner Name	N/A
Total Number of Pages in This Submission	Attorney Docket Number	9319T-1174/NP

**ENCLOSURES (check all that apply)**

<input type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached <input type="checkbox"/> Amendment / Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Response to Missing Parts/ Incomplete Application <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s) _____	<input type="checkbox"/> After Allowance Communication to Technology Center (TC) <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input checked="" type="checkbox"/> Other Enclosure(s) (please identify below): <b>Request for Corrected Official Filing Receipt with OFR &amp; ADS, Published International Application WO 2004/047258 A3 and return postcard.</b>
<b>Remarks</b> The Commissioner is hereby authorized to charge any additional fees that may be required under 37 CFR 1.16 or 1.17 to Deposit Account No. 50-3213. A duplicate copy of this sheet is enclosed.		

**SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT**

Firm or Individual name	Harness, Dickey & Pierce, P.L.C.	Attorney Name	G. Gregory Schivley	Reg. No.	27,382
Signature					
Date	December 21, 2005				

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EV 717 344 344 US



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 10/533,651  
Filing Date: May 5, 2005  
Applicant: Kesatoshi Takeuchi  
Group Art Unit: 2834  
Examiner: Unknown  
Title: MAGNETIC STRUCTURE AND MOTOR EMPLOYING  
SAID MAGNETIC STRUCTURE, AND DRIVER  
COMPRISING SAID MOTOR  
Attorney Docket: 9319T-001174/NP

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**REQUEST FOR CORRECTED OFFICIAL FILING RECEIPT**

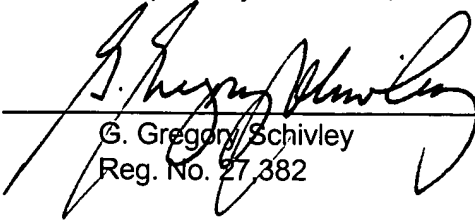
Sir:

We acknowledge receipt of the Filing Receipt for the above-identified patent application. However, the **Foreign Applications** section is incorrect. Please correct your records to show Japanese priority application Nos. 2002-334160 filed November 18, 2002, 2003-157229 filed June 2, 2003, **2003-175456** filed June 19, 2003 and 2003-313170 filed September 4, 2003. This correction can be seen on the OFR copy enclosed along with a copy of the Application Data Sheet. Thank you for your assistance.

Respectfully submitted,

Dated: December 21, 2005

By: \_\_\_\_\_

  
G. Gregory Schivley  
Reg. No. 27,382

Harness, Dickey & Pierce, P.L.C.  
P.O. Box 828  
Bloomfield Hills, MI 48303  
GGS/msm



## UNITED STATES PATENT AND TRADEMARK OFFICE

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APPL NO.	FILING OR 371 (c) DATE	ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	DRAWINGS	TOT CLMS	IND CLMS
10/533,651	05/05/2005	2834	2100	9319T-1174/NP	50	27	6

CONFIRMATION NO. 9567

27572

HARNESS, DICKEY & PIERCE, P.L.C.  
P.O. BOX 828  
BLOOMFIELD HILLS, MI 48303

## FILING RECEIPT



\*OC000000017268039\*

Date Mailed: 12/15/2005

Receipt is acknowledged of this regular Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please mail to the Commissioner for Patents P.O. Box 1450 Alexandria Va 22313-1450. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).**

## Applicant(s)

Kesatoshi Takeuchi, Nagano-ken, JAPAN;

## Assignment For Published Patent Application

Seiko Epson Corporation, Tokyo, JAPAN

Power of Attorney: The patent practitioners associated with Customer Number **27572**.

## Domestic Priority data as claimed by applicant

This application is a 371 of PCT/JP03/14667 11/18/2003

## Foreign Applications

JAPAN 2002-334160 11/18/2002

JAPAN 2003-157229 06/02/2003

~~JAPAN 203-175456 06/19/2003~~

JAPAN 2003-313170 09/04/2003

JAPAN 2003-175456 06/19/2003

Projected Publication Date: To Be Determined - pending completion of Security Review

Non-Publication Request: No

Early Publication Request: No

**Title**

Magnetic structure and motor employing said magnetic structure, and driver comprising said motor

**Preliminary Class**

310

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## APPLICATION DATA SHEET

**Title of  
Invention**

MAGNETIC STRUCTURE AND MOTOR EMPLOYING SAID  
MAGNETIC STRUCTURE, AND DRIVER COMPRISING SAID  
MOTOR

Application Type: regular, utility  
Attorney Docket Number: 9319T-1174/NP

Correspondence address:

**Customer Number:**

27572

\*27572\*

Continuing Data:

This is a National Stage of WO application number PCT/JP2003/014667, filed 2003-11-18.

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Doc.No: 2003-157229; Country - JP; Date: 2003-06-02 us-priority-claimed  
Doc.No: 2003-175456; Country - JP; Date: 2003-06-19 us-priority-claimed  
Doc.No: 2003-313170; Country - JP; Date: 2003-09-04 us-priority-claimed

Inventor Information:

Inventor 1:

**Applicant Authority Type:**

Inventor

**Citizenship:**

JP

**Given Name:**

Kesatoshi

**Family Name:**

TAKEUCHI

**City of Residence:**

Shiojiri-shi

**Country of Residence:**

JP

**Address-1 of Mailing Address:**

c/o Seiko Epson Corporation,

**Address-2 of Mailing Address:**

3-5, Owa 3-chome

**City of Mailing Address:**

Suwa-shi, Nagano-ken

**State of Mailing Address:**

**Postal Code of Mailing Address:** 392-8502

**Country of Mailing Address:** JP

**Phone:**

**Fax:**

**E-mail:**

**Attorney Information:**

<b>Name</b>	<b>Registration Number</b>
G. Gregory Schivley	27,382

**Publication Information:**

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Suggested Classification -

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**Assignee 1:**

**Organization Name:** SEIKO EPSON CORPORATION

**Address-1 of Mailing Address:** 4-1, Nishishinjuku 2-chome

**Address-2 of Mailing Address:** Shinjuku-ku

**City of Mailing Address:** Tokyo

**State of Mailing Address:**

**Postal Code of Mailing Address:** 163-0811

**Country of Mailing Address:** JP

**Phone:**

**Fax:**

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2003-175456 19 June 2003 (19.06.2003) JP  
2003-313170 4 September 2003 (04.09.2003) JP

(72) Inventor; and

(75) Inventor/Applicant (for US only): TAKEUCHI, Ke-  
satoshi [JP/JP]; c/o SEIKO EPSON CORPORATION,  
3-5, Owa 3-chome, Suwa-shi, Nagano 392-8502 (JP).

(74) Agents: INABA, Yoshiyuki et al.; TMI ASSOCIATES,  
23rd Floor, Roppongi Hills Mori Tower, 6-10-1, Roppongi,  
Minato-ku, Tokyo 106-6123 (JP).

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Published:

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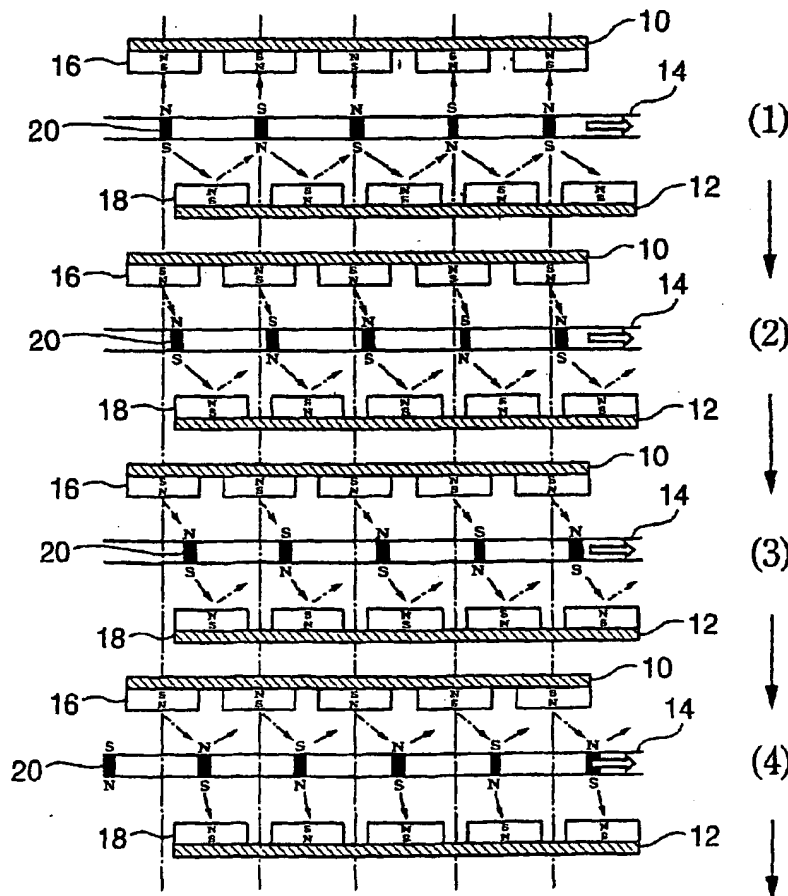
— with amended claims

(71) Applicant (for all designated States except US): SEIKO  
EPSON CORPORATION [JP/JP]; 4-1, Nishishinjuku  
2-chome, Shinjuku-ku, Tokyo 163-0811 (JP).

(88) Date of publication of the international search report:  
24 March 2005

[Continued on next page]

(54) Title: MAGNETIC STRUCTURE AND MOTOR EMPLOYING SAID MAGNETIC STRUCTURE, AND DRIVER COM-  
PRISING SAID MOTOR



(57) Abstract: Provided is a small motor superior in weight/torque balance. A phase stator 10 and B phase stator 12 are disposed to face each other. A rotor is interpositioned between these stators. Electromagnetic coils @are provided to the stators evenly in the circumferential direction. A permanent magnet is provided to the rotor evenly in the circumferential direction. The exciting polarity of the electromagnetic coil is alternately opposite, and this is the same for the permanent magnet. A signal having a prescribed frequency is input to the A phase electromagnetic coil and B phase electromagnetic coil. The rotor rotates between the stators as a result thereof.





Date of publication of the amended claims: 12 May 2005

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

[Received by the International Bureau on 03 March 2005 ( 03.03.05 ):  
original claims 1, 5, 9, 21 and 23 are amended, original claims 2-4, 8, 12, 13-17, 19, 20,  
22, 24, 25, 27, 29 and 30 are cancelled, the remaining claims are retained unchanged.  
(8 pages)]

1. (Amended) A magnetic structure comprising a first magnetic bodies and a second magnetic body, and a third magnetic body disposed therebetween and relatively movable in a prescribed direction in relation to said first and second magnetic bodies,

wherein said first magnetic body and second magnetic body respectively comprise a structure in which a plurality of electromagnetic coils capable of being alternately excited to opposite polarities is disposed in order; said third magnetic body comprises a structure in which permanent magnets alternately magnetized to opposite polarities are disposed in order; and said first magnetic body and said second magnetic body are structured such that an electromagnetic coil of said first magnetic body and an electromagnetic coil of said second magnetic body are disposed so as to mutually possess an array pitch difference,

said magnetic structure further comprising a coil exciting circuit for supplying an exciting current, consisting of frequency signals having different phases,

to the electromagnetic coils of said first and second magnetic bodies,

wherein the pair formed from said first and second magnetic bodies and one side of said third magnetic body form a rotor, and the pair formed from said first and second magnetic bodies and the other side of said third magnetic body form a stator, and

wherein said coil exciting circuit controls excitation of the electromagnetic coils of said first and second magnetic body via the exciting current supplied to the electromagnetic coils, the phase of the current being corrected based on a rotational speed of said rotor.

2. (Cancelled)

3. (Cancelled)

4. (Cancelled)

5. (Amended) A magnetic structure according to any one of claims 1, wherein said first magnetic body, second magnetic body and third magnetic body are respectively formed in a circular arc.

6. A magnetic structure according to any one of claims 1 or 5, wherein said first magnetic body, second magnetic

body and third magnetic body are respectively formed in a straight line.

7. A magnetic structure according to claim 5 or claim 6, wherein said first magnetic body and second magnetic body are disposed at an equidistance, and said third magnetic body is disposed between said first magnetic body and second magnetic body.

8. (Cancelled)

9. (Amended) A motor according to claim 1, further comprising a rotational speed detection means of said rotor.

10. A motor according to claim 9, wherein said exciting circuit means comprises reference pulse signal generation means; and phase correction means for correcting the phase of the exciting current to be supplied to the electromagnetic coil of said first magnetic body and the electromagnetic coil of said second magnetic body based on said rotational speed detection signal and said reference pulse signal.

11. A motor according to claim 10, wherein said exciting circuit means comprises buffer means for controlling the exciting direction of said electromagnetic coil at a

prescribed duty ratio upon the phase-corrected exciting current being supplied thereto.

12. (Cancelled)

13. A motor comprising the magnetic structure according to any one of claims 1 to 7, wherein the pair formed from said first and second magnetic bodies and one side of said third magnetic body form a slider, and the pair formed from said first and second magnetic bodies and the other side of said third magnetic body form a stator.

14. A motor according to any one of claims 8 to 12, wherein a gear is formed on said rotor.

15. A motor according to any one of claims 8 to 12, wherein said rotor is connected to a rotating body, and functions as a power generator.

16. A motor according to any one of claims 8 to 12, wherein a plurality of pairs formed from said stator and rotor is connected serially or in parallel.

17. A driver comprising the motor according to any one of claims 8 to 12 as a drive source.

18. A motor comprising a stator and a rotor, wherein a gear is formed on said rotor or stator.

19. (Cancelled)

20. (Cancelled)

21. (Amended) A driving method of a magnetic body, wherein a third magnetic body is interpositioned between a first magnetic body and a second magnetic body, the respective magnetic bodies comprise a plurality of magnetic units capable of being alternately magnetized to opposite poles, and said first magnetic body and second magnetic body, and said third magnetic body may be moved relatively by periodically changing the magnetic pattern pertaining to the magnetic unit of at least one magnetic body, wherein the magnetic circuit in relation to said magnetic body is structured in an open loop.

22. (Cancelled)

23. (Amended) A magnetic structure according to claim 1 , wherein said exciting circuit comprises a start-up control unit for generating a reference wave pulse and forming an exciting signal to be supplied to said magnetic body from said reference wave pulse in order to start-up said first and/or second magnetic body; and a sensor follow-up control unit for forming an exciting signal to be supplied to said magnetic body by following the output from the

rotational position sensor of said magnetic body after the start-up of said magnetic body.

24. (Cancelled)

25. (Cancelled)

26. A magnetic structure according to claims 1, wherein every exciting coil is constantly excited during the start-up rotation ( $2\pi$ ) in relation to the two-phase exciting coil.

27. A magnetic structure according to claim 2, wherein the duty ratio of the signal to be supplied from said exciting circuit means to the electromagnetic coil of said first and/or second magnetic body is made to change.

28. A magnetic structure according to claim 27, wherein said duty ratio is determined in accordance with the driving state of the load driven with said magnetic structure.

29. (Cancelled)

30. (Cancelled)

31. A magnetic structure according to claim 1, wherein said first and second magnetic structures are structured from an electromagnetic coil formed in a coil shape by winding a conducting sleeve around a nonmagnetic bobbin.

32. A magnetic structure according to claim 31, wherein a magnetic body is driven via switching of attraction and repulsion between third magnetic bodies formed from said electromagnetic coil and a permanent magnet.

33. A magnetic structure according to claim 31, wherein said first and second magnetic bodies are structured from a magnetic stator formed from a nonmagnetic bobbin.

34. A magnetic drive mechanism, comprising an electromagnetic coil having formed thereon a nonmagnetic conductive pattern and a permanent magnet; means for supplying exciting current to said electromagnetic coil; and switching means for switching the attraction and repulsion between said electromagnetic coil and permanent magnet.

35. A mechanism according to claim 34, wherein a magnetic field in the horizontal direction is formed in said electromagnetic coil and permanent magnet.

36. A magnetic drive-power generation mechanism for rotating a rotor in relation to a stator by utilizing the attraction and repulsion between the electromagnetic coil and permanent magnet, wherein the magnetic field is formed parallel to the rotating direction of the rotor.



37. A magnetic drive-power generation mechanism according to claim 36, wherein said stator and rotor are formed in a disc shape.

38. A magnetic body formed such that a plurality of electromagnetic coils or permanent magnets is alternately disposed so as to be opposite poles on a disc.

39. A magnetic body according to claim 38, wherein said disc is formed from a nonmagnetic material.